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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,636	12/17/2003	Chi-Kuang Lai	09071.0004	3852

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Washington, DC 20005-3315

EXAMINER

VU, PHU

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,636	LAI, CHI-KUANG	
	Examiner	Art Unit	
	Phu Vu	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2003.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some * c) ☐ None of:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the feature of “a second polarizer between the first LC layer and the second electrode layer” found in claim 12 and the feature of “a color-filter-on-array (COA) substrate” found in claims 11 and 15, these must be shown or the feature(s) canceled from the claim(s).** No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 16 is missing from the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-5, 7-10, and 17- 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Paukshto et. at 2004/0036821 and further in view of Nose 2001/0000436.

Regarding claim 1, Paukshto teaches a liquid crystal display (LCD) comprising: an electro-optical light shutter (EOLS) including a plurality of regions arranged in a pattern (fig. 2 formed by elements 110-116), and during a frame time controlling light from the backlight source to pass the regions in a display time that allows the LCD to display an image and an LCD panel (fig. 2 elements 101-107) disposed to sandwich the EOLS with the backlight source receiving the light passing through the EOLS to display the image. Paukshto does not explicitly state a backlight however Nose teaches a backlight is to provide illumination in a liquid crystal display (see cover figure element 1). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to include a backlight in a liquid crystal display to provide illumination.

Regarding claims 2 and 3, the shutter controlling the backlight source to pass each of the regions in a sequence (shutter partially open) or at the same time (shutter completely open) is the nature of a shutter, therefore this limitation provides no additional structural limitations over claim 1.

Regarding claim 4, the reference teaches the EOLs further comprising: first substrate (fig. 2 element 115), a first electrode layer on the first substrate further comprising a plurality of transparent electrodes formed in parallel to each other (fig. 2 element 114); a second substrate opposing the first substrate (fig. 2 element 110); a second electrode layer on the second substrate (fig. 2 element 103); and a liquid crystal (LC) layer (fig. 2 element 113) between the first and second electrode layers.

Regarding claim 7, the reference teaches a polarizer on which the first substrate is disposed (fig. 2 element 116).

Regarding claim 8, the reference teaches an embodiment wherein one of the polarizers can be placed in between the electrode layer and a substrate (see [0071]) in order to decrease layer thickness and improve dark state. Layer 201 can be placed between 110 and 103 which would have a first polarizer on the first substrate disposed (fig. 2 elements 116 and 115) and a second substrate 110 placed on a second polarizer 201. Therefore, at the time of the invention it would have been obvious at the time of the invention to place a second substrate over a second polarizer to improve dark state and layer thickness.

Regarding claim 9, the reference teaches a first polarizer (fig. 2 element 116), a first substrate on the first polarizer (fig. 2 element 115), a first electrode layer on the first

substrate (fig. 2 element 114) further comprising a plurality of transparent electrodes formed in parallel to each other, a second substrate opposing the first substrate (fig. 2 element 110) a second electrode layer (fig. 2 element 112) on the second substrate, a first liquid crystal (LC) layer between the first and second electrode layers (fig. 2 element 113), a second polarizer on the second substrate (fig. 2 element 201) a third substrate over the second polarizer (fig. 2 element 102), a second LC layer between the second polarizer and the third substrate (fig. 2 element 105) and a third polarizer on the third substrate (fig. 2 element 101). The reference does show an additional substrate (fig. 2 element 107) however, in the reference teaches another embodiment (fig. 5) that shows the substrates can be eliminated to reduce thickness. Therefore at the time of the invention, it would have been obvious to eliminate a substrate in order to reduce the thickness of the device.

Regarding claims 17-19, the reference teaches a liquid crystal display (LCD) provided with an electro-optical light shutter (EOLS) including a plurality of regions arranged in a pattern (fig. 2 formed by elements 110-116), and during a frame time controlling light from the backlight source to pass the regions in a display time that allows the LCD to display an image and an LCD panel (fig. 2 elements 101-107) disposed to sandwich the EOLS with the backlight source receiving the light passing through the EOLS to display the image. The reference does not explicitly disclose selective, sequential, biasing the electrodes at the same time however, it is well known in the art to individually drive electrodes otherwise there would be no reason to form individual electrodes over a single larger electrode. Also sequential operation as well as

simultaneous driving modes of operation are obvious over a shutter mechanism.

Paukshto does not explicitly state a backlight however a backlight is well known in the art to provide illumination in a liquid crystal display. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to include a backlight in a liquid crystal display to provide illumination.

Regarding claims 5, 10, and 20, the reference teaches electrodes made of ITO (see [0092]).

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Paukshto as applied to claim 1 and further in view of Sakai 6245257. Paukshto teaches all the limitations of claim 6 except ferroelectric liquid crystal. Sakai teaches ferroelectric liquid crystal for faster response times (column 1 lines 29-39). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use ferroelectric liquid crystal to improve response time.

Claim 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paukshto et. al. 2004/0036821, and further in view of Leibowitz U.S. Patent No. 4241984. Paukshto teaches a first polarizer (fig. 2 element 116) a first substrate on the first polarizer (fig. 2 element 1150) a first electrode layer (fig. 2 element 114) on the first substrate further comprising a plurality of transparent electrodes formed in parallel to each other, a second substrate (fig. 2 element 110) opposing the first substrate; a second electrode layer on the second substrate (fig. 2 element 112), a first liquid crystal (LC) layer (fig 2 element 113) between the first and second electrode layers, a third substrate over the second substrate (fig. 2 element 102), a second LC layer between

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the second and third substrates (fig. 2 element 105) and a third polarizer (fig. 2 element 101) on the third substrate. The reference does teach an additional substrate (fig. 2 element 107) however this can be eliminated to reduce thickness (see claim 9 rejection). The only limitation Paukshto does not teach is a polarizer between the LC layer and transparent electrode. Leibowitz teaches a polarizer (see fig. 2-5 element 30) between the transparent electrode and LC layer that doubles as an alignment layer (see abstract). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to move the polarizer between the LC layer and electrode layer in order to double as an alignment layer.

Regarding claim 13, the primary reference teaches that the substrate is plastic (see reference claim 13).

Regarding claim 14, the reference teaches electrodes made of ITO (see [0092]).

Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paukshto and Leibowitz as applied to claims 9 and 12 above, and further in view of Iida US Patent 5278009. Paukshto and Leibowitz disclose all the limitations of claims 11 and 15, except a color filter on array substrate. Iida teaches a color filter on array substrate to provide for color display (see abstract and cover figure elements 8, 9, 10). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate color filters onto the substrate to provide a color display.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871


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